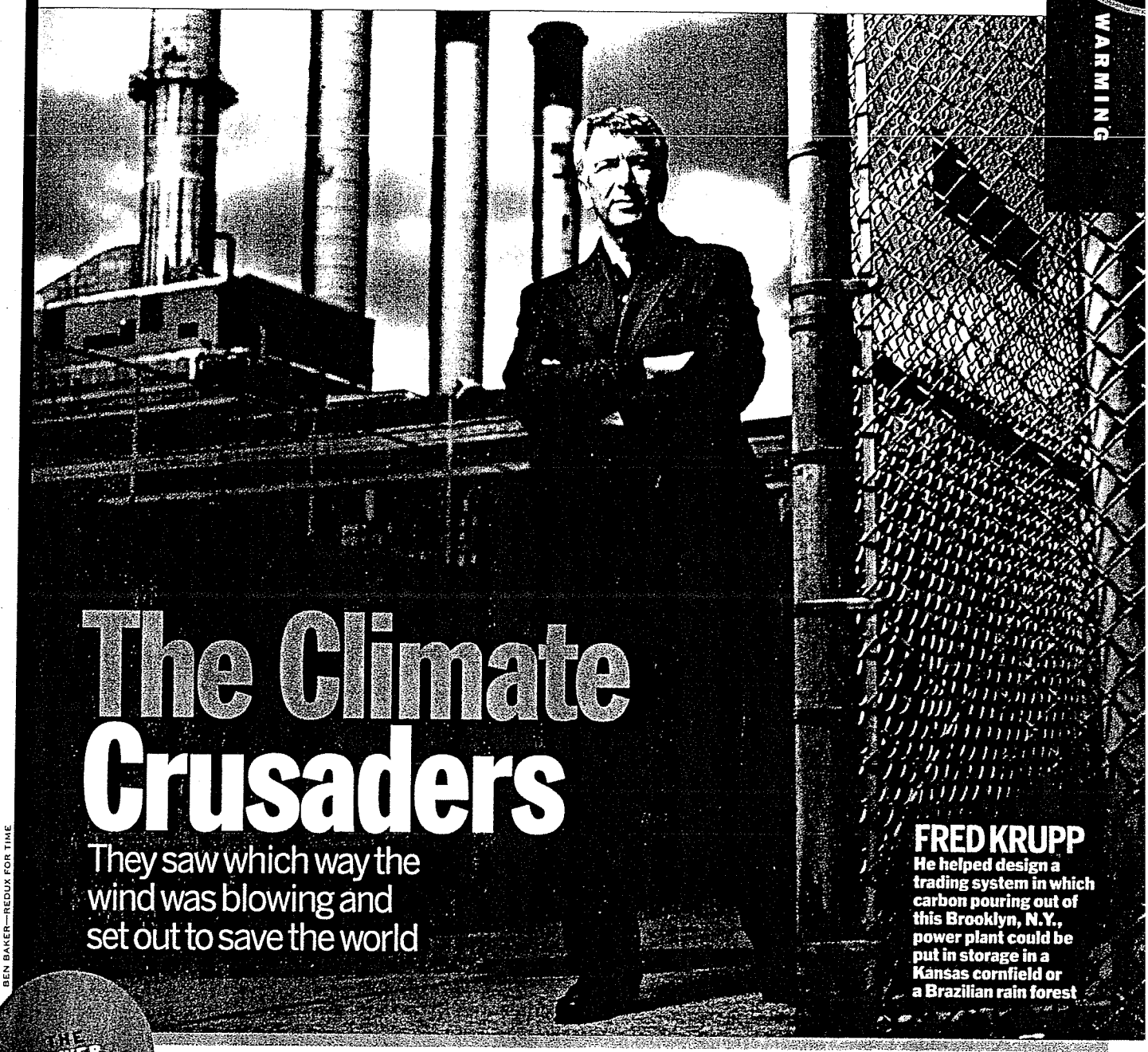

The Climate Crusaders

They saw which way the wind was blowing and set out to save the world

FRED KRUPP
He helped design a trading system in which carbon pouring out of this Brooklyn, N.Y., power plant could be put in storage in a Kansas cornfield or a Brazilian rain forest

BEN BAKER—REDUX FOR TIME

THE POWER BROKER

REWARDING GOOD BEHAVIOR

FRED KRUPP WANTS TO DO SOMETHING ABOUT THE carbon dioxide that spews from tailpipes and smokestacks. But why is the president of Environmental Defense looking for solutions in tropical rain forests and Kansas cornfields? Because forests and fields pull greenhouse gases from the air. So Krupp, 52, went to Brazil to urge protection of the Amazon basin and to Kansas to promote no-till farming. Plowing fields releases CO_2; if farmers plant seeds without tilling, three-quarters of a metric ton of carbon per acre could be stored every year.

What's in it for Brazilians and Kansans? Environmental Defense is lobbying Congress to approve a system that would mandate reductions in emissions and allow the sale of permits to release specified amounts of carbon. Companies having trouble cutting emissions could buy allowances from firms that have unused permits. Or they could pay farmers to store carbon and developing nations to preserve forests. The idea comes from a concept developed by Environmental Defense when Krupp helped draft the 1990 Clean Air Act. It set up a trading system to control sulfur dioxide. Krupp believes similar financial incentives could slow global warming. "Once you put a value on carbon reductions," he says, "you make winners out of innovators. You offer a pot of gold." ***—By Charles Alexander***

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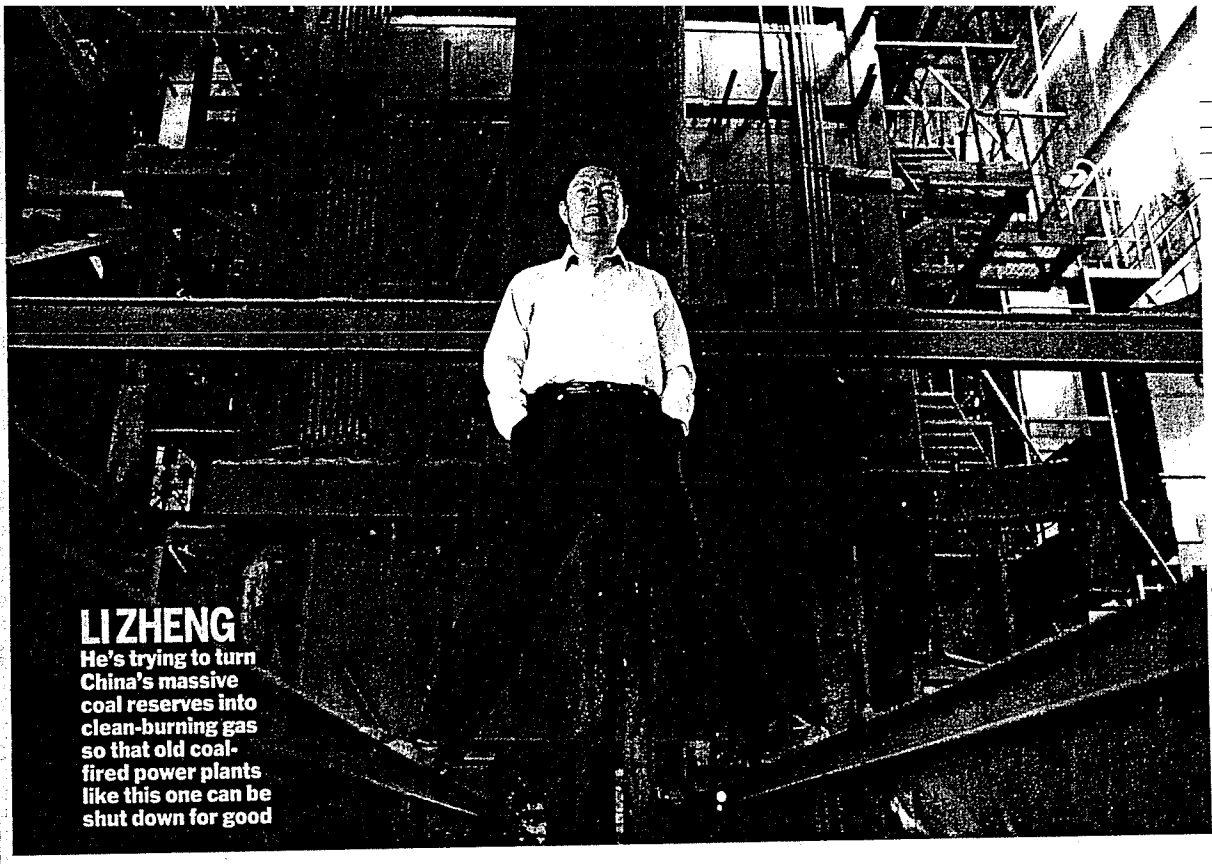


LI ZHENG
He's trying to turn China's massive coal reserves into clean-burning gas so that old coal-fired power plants like this one can be shut down for good

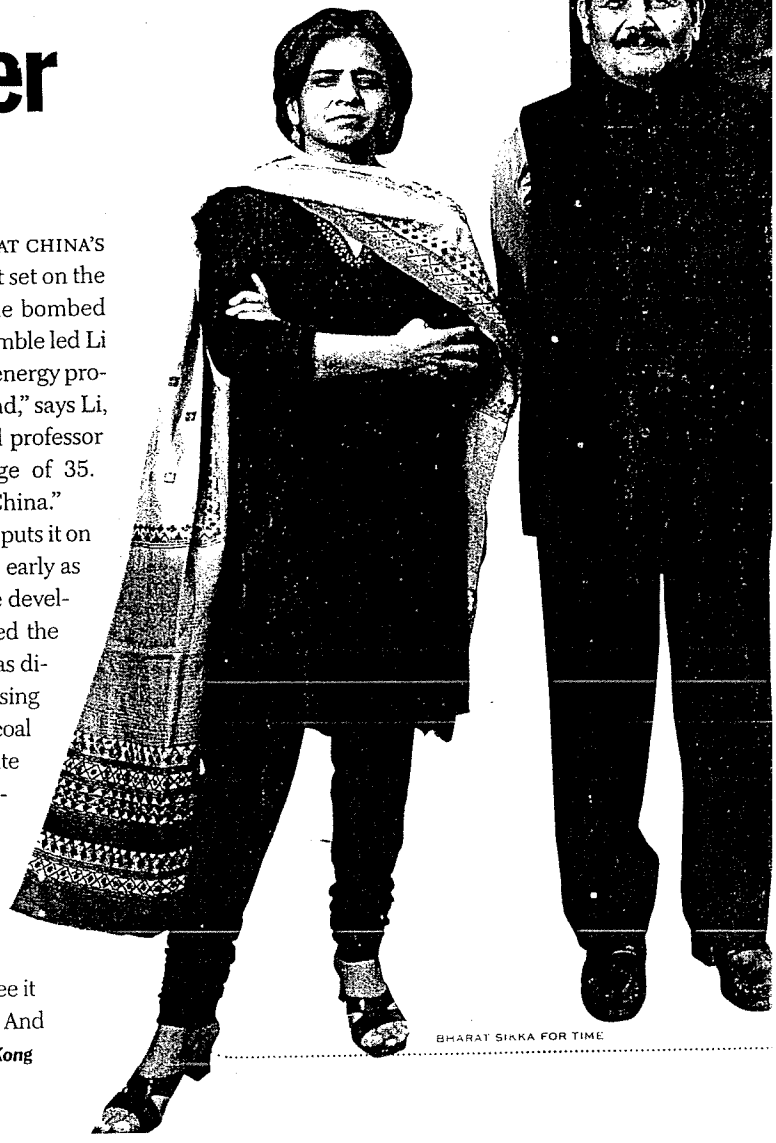
CHIEN-MIN CHUNG—GETTY FOR TIME

THE ENERGY ENGINEER

Clean Power For China

LIKE JUST ABOUT EVERY AMBITIOUS ENGINEERING STUDENT AT CHINA'S Tsinghua University in the early 1980s, Li Zheng had his heart set on the high-tech, high-profile electronics field—up until the day he bombed on an electronics exam. But his uncharacteristic classroom stumble led Li to a field that could play an even larger role in China's future: energy production. "I think the choice was a very fortunate one in the end," says Li, who studied thermal engineering and in 2000 became a full professor at Tsinghua—China's M.I.T.—at the remarkably young age of 35. "Energy is incredibly important for a growing society like China."

But energy means carbon, and China's booming economy puts it on a path to become the world's No. 1 greenhouse-gas emitter as early as 2020. Li knows that China needs clean energy as badly as the developed world needs China to clean up, which is why he joined the Tsinghua-BP Clean Energy Research and Education Center as director when it opened in July 2003. The center's most promising project is a new technology called polygeneration, by which coal is converted into a cleaner gaseous fuel that can both generate electricity and be processed into a petroleum substitute. Polygeneration could cut the carbon emissions China generates by burning its copious coal reserves and reduce its dependence on oil imports. While his team continues to refine the technology—it's still more expensive than direct coal combustion—Li is lobbying the government to construct a $600 million demonstration plant, and he's optimistic he will see it built. "China is motivated to develop this technology," Li says. And the rest of the world is hoping it does. *—By Bryan Walsh/Hong Kong*



BHARAT SIKKA FOR TIME

THE SNOW MA OF ASPEN

AUDEN SCHENDLE
Cleaning up the s industry is an uphi battle, he concede but "it's no longer O.K. to focus on small things like whether we recyc our season passe

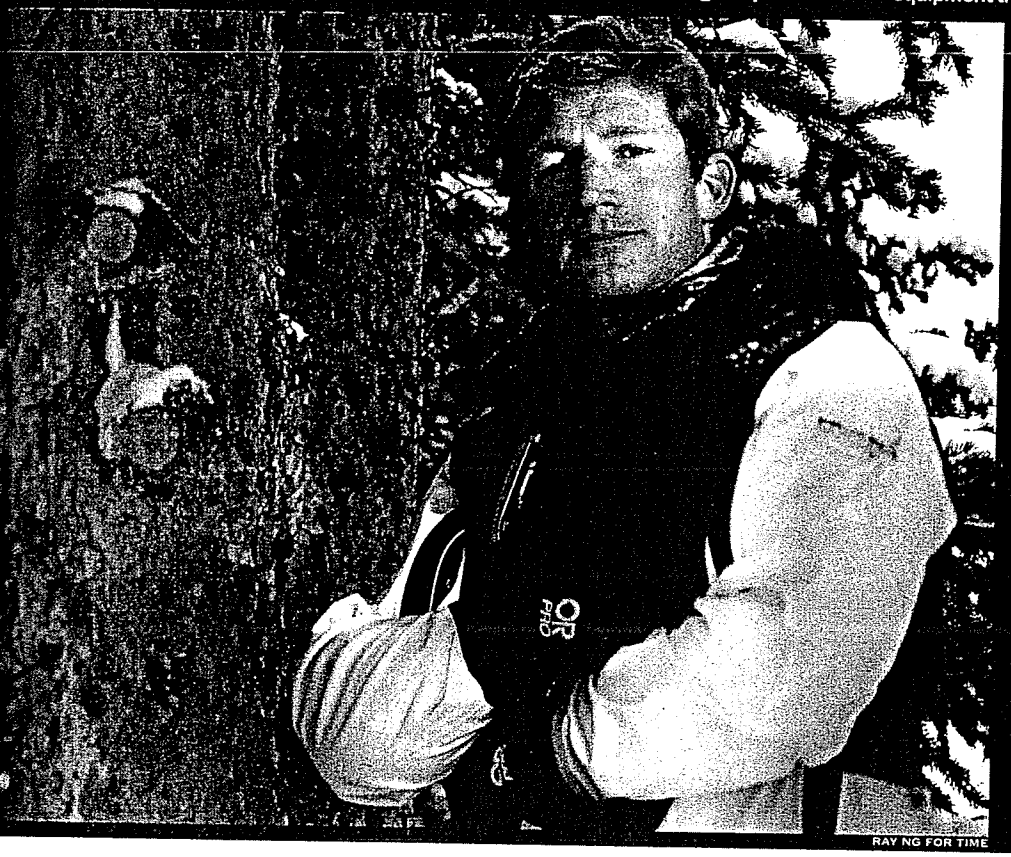
KEEPING WINTER COOL

If the 1998 fires set in Vail, Colo., by protesters from Earth Liberation Front were an environmental wake-up call for the ski industry, Auden Schendler, 35, is a triple shot of espresso. Hired the next year by Aspen Skiing Co. (ASC), he has become the most visible of a crop of experts charged with cleaning up the industry's act. Between keeping the lodges toasty and draining the creeks for snowmaking, downhill-skiing companies in the late 1990s were major consumers of natural resources. And ASC, which now operates four mountains, two hotels and 12 restaurants in the Aspen-Snowmass area, was one of the biggest. Its snowmaking operations alone consume some 160 million gallons of water a year.

Schendler set about changing that. ASC had already invested $10.5 million in efficient snowmaking equipment that saved more than 6 million gallons of water in one year. At Schendler's urging, it became the first ski company to issue a climate-change policy, with a public commitment to cutting greenhouse gases that has led to a 75% reduction in emissions. ASC was the first to use biodiesel fuel in snowcats, issue sustainability reports and develop a green building policy.

A graduate of Bowdoin College, Schendler insulated trailers for the poor before joining Amory Lovins' famed Rocky Mountain Institute. He found a kindred spirit in ASC president and CEO Pat O'Donnell, although the road to environmental enlightenment at ASC hasn't always been smooth. It took four years to persuade the company to retrofit a parking garage with fluorescent light fixtures, a move Schendler calculates rid the atmosphere of 300,000 lbs. of CO_2 annually.

A prolific writer and major supporter of the Keep Winter Cool campaign, a partnership between the ski industry and the Natural Resources Defense Council, Schendler feels he has helped change the culture of skiing, at least at ASC. "We've turned this place into a lab for addressing climate change," he says. "Aspen is a lever that can change the world." *—By Rita Healy/Denver*



RAY NG FOR TIME

Delhi Without Diesel

THE FIGHTERS

◀ SUNITA NARAIN & BHURE LAL

They forced thousands of buses, taxis and rickshaws to switch to compressed natural gas, stabilizing pollution in a city that was one of the dirtiest in the world

MELTING ICE CAPS DIDN'T FIGURE INTO THE FIGHT Sunita Narain and Bhure Lal led to build the world's cleanest public-transport network. They had more pressing concerns. "New Delhi was choking to death," says Narain, 43, director of India's Center for Science and Environment. "Air pollution was taking one life per hour." Adds Lal, 63, then a senior government administrator: "The capital was one of the most polluted on earth. At the end of the day, your collar was black, and you had soot all over your face. Millions had bronchitis and asthma."

In the mid-1990s, Narain filed a lawsuit to force Delhi's buses, taxis and rickshaws to convert to cleaner-burning compressed natural gas (CNG). In July 1998, the Supreme Court ruled largely in her favor and adopted many of her proposals. It ordered a ban on leaded fuel, conversion of all diesel-powered buses to CNG and the scrapping of old diesel taxis and rickshaws. But busmakers and oil companies—supported by government ministers—objected loudly. So the court formed a committee, led by Lal and Narain, to enforce its judgment.

The unlikely duo immediately ran into roadblocks. Bus companies took vehicles off the road, stranding angry commuters. Mile-long queues of rickshaws formed at the handful of gas stations with CNG pumps. Oil companies trotted out scientists who claimed that CNG was just as polluting as diesel. But Narain and Lal fought back. By December 2002, the last diesel bus had left Delhi, and 10,000 taxis, 12,000 buses and 80,000 rickshaws were powered by CNG.

Although air pollution in Delhi has stabilized, the fight for clean air is far from won. Some 400 to 600 new private cars roll onto the city's streets every day. Narain and Lal don't claim to have slowed global warming. But their efforts have attracted requests for advice from as far away as Kenya and Indonesia. "Delhi leapfrogged," Narain says with a grin. "People noticed." *—By Alex Perry/New Delhi*

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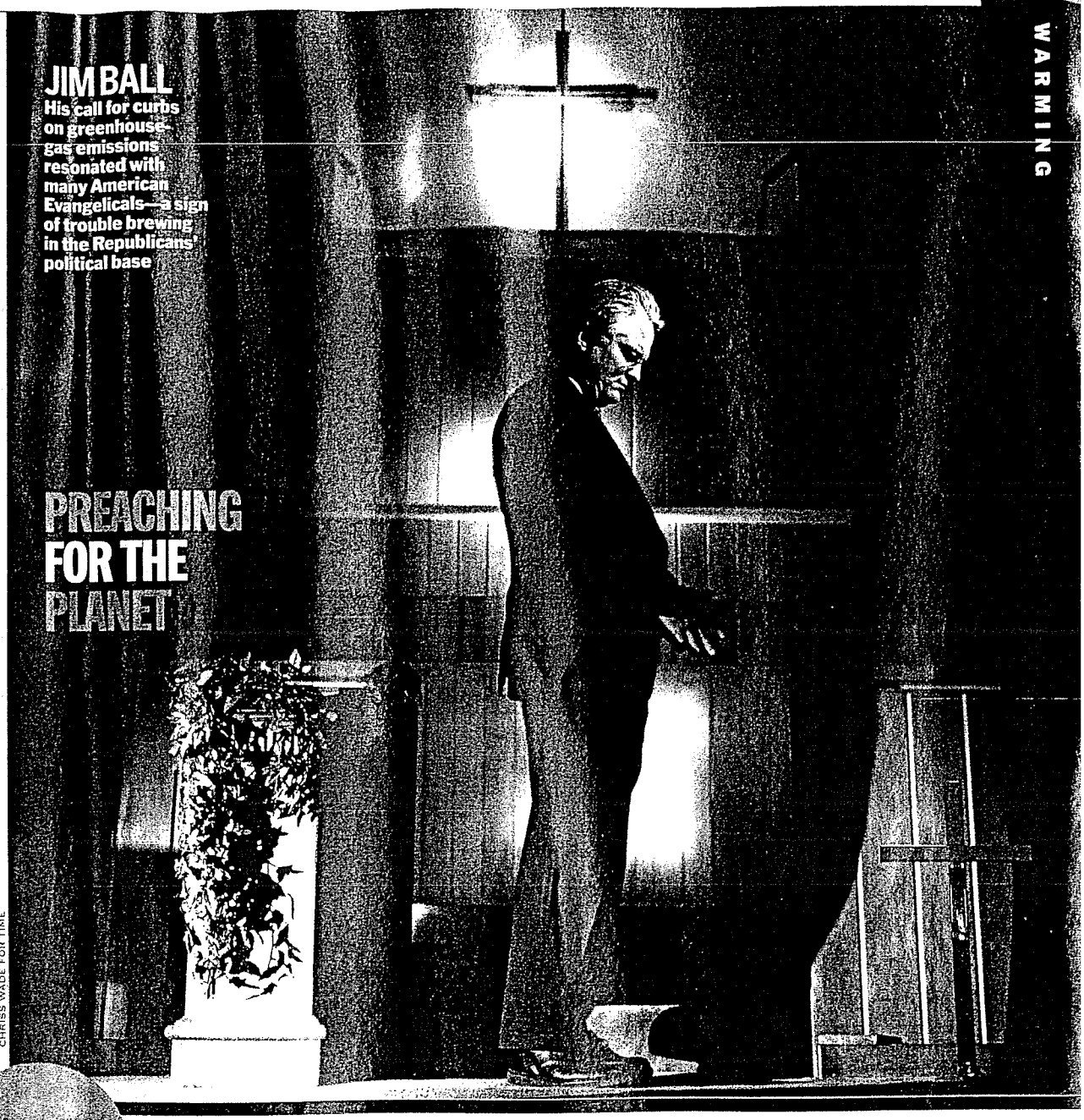


JIM BALL
His call for curbs on greenhouse-gas emissions resonated with many American Evangelicals—a sign of trouble brewing in the Republicans' political base

PREACHING FOR THE PLANET

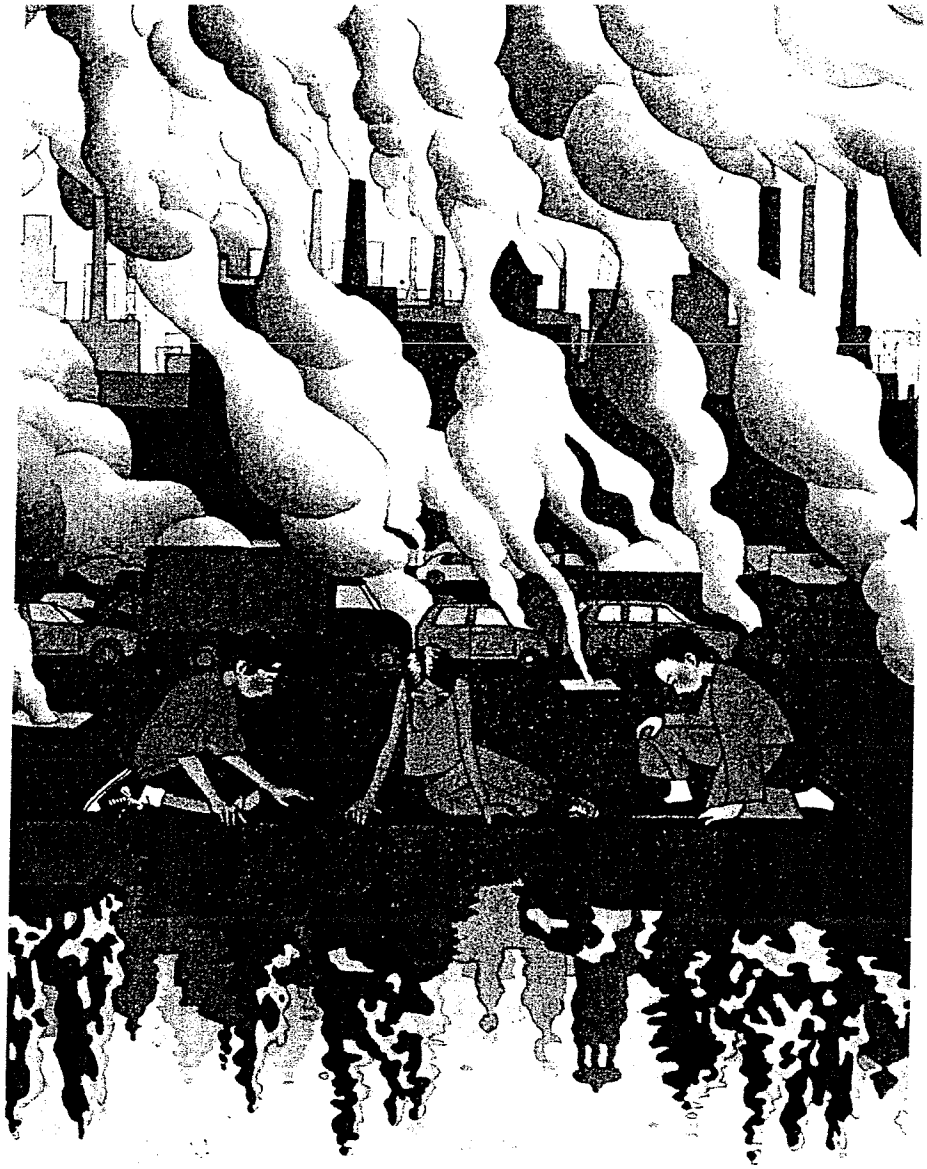
CHRISS WADE FOR TIME

THE EVANGELICAL ACTIVIST

The Rev. Jim Ball agrees with President George W. Bush's positions on abstinence, stem-cell research, traditional marriage and the rights of an unborn child. But the Administration's environmental policies strike him as morally wrongheaded, and he's not afraid to say so. He led the 2002 "What Would Jesus Drive?" campaign against gas-guzzling cars and was one of the organizers of the Evangelical Climate Initiative in February, when 86 evangelical Christian leaders called on Congress to regulate carbon-dioxide emissions.

Ball, 44, practices what he preaches (he drives an energy-efficient Toyota Prius) and he came to his environmental beliefs honestly: through Scripture and concern for the living and the unborn. Fearing that millions of lives could be lost in global-warming-related disasters, he began studying environmentalism at Drew University in 1994 and emerged three years later with a Ph.D. in theological ethics. He became executive director of the Evangelical Environmental Network in 2000.

Activist ministers like Ball and Richard Cizik of the National Association of Evangelicals represent a significant political liability for the Bush Administration and its allies in Congress—a sign that their energy policies have put them on a collision course with a core constituency. Pay attention to our message, Ball argues, because climate change is not a left-wing, tree-hugging issue. "It's a people problem. It's about loving your neighbor." *—By Eric Roston*



The Impact of Asia's GIANTS

How China and India could save the planet—or destroy it

BY BRYAN WALSH

IF EVERYONE LIVED LIKE THE average Chinese or Indian, you wouldn't be reading about global warming. On a per capita basis, China and India emit far less greenhouse gas than energy-efficient Japan, environmentally scrupulous Sweden—and especially the gas-guzzling U.S. (The average American is responsible for 20 times as much CO_2 emission annually as the average Indian.) There's only one problem: 2.4 billion people live in China and India, a great many of whom aspire to an American-style energy-intensive life. And thanks to the break-neck growth of the two countries' economies, they just might get there—with potentially disastrous results for the world's climate.

The International Energy Agency (IEA) forecasts that the increase in greenhouse-gas emissions from 2000 to 2030 from China alone will nearly equal the increase from the entire industrialized world. India, though behind its Asian rival, could see greenhouse-gas emissions that rise 70% by 2025, according to the World Resources Institute. But the nearly double-digit growth rates that are responsible for those nightmare projections also present an environmental opportunity. "Anything you want to do about clean energy is easier to do from the outset," says David Moskowitz, an energy consultant who has advised Chinese officials. "Every time they add a power plant or factory, they can add one cleaner and better than before." If China and India can muster the will and resources to leapfrog the West's energy-heavy development path, dangerous climate change might be averted. "China and India have to demonstrate to other countries that it is possible to develop in a sustainable way," says Yang Fuqiang, vice president of the Energy Foundation in Beijing. "We can't fail."

The Kyoto accord on climate change did nothing to slow growth in China and India because as developing countries they are not required under the protocol to make cuts in carbon emissions—and that is not likely to change after the agreement expires in 2012. Both countries are desperate for energy to fuel the economic expansion that is pulling their citizens out of poverty, and despite bold investments in renewables, much of that energy will have to come from coal, the only

Illustration for TIME by Yan Nascimbene

traditional energy source they have in abundance. Barbara Finamore, director of the Natural Resources Defense Council's China Clean Energy Program, estimates that China's total electricity demand will increase by 2,600 gigawatts by 2050, which is the equivalent of adding four 300-megawatt power plants every week for the next 45 years. India's energy consumption rose 208% from 1980 to 2001, even faster than China's, but nearly half the population still lacks regular access to electricity—a fact the government is working to change. "They'll do what they can, but overall emissions are likely to rise much higher than they are now," says Jonathan Sinton, China analyst for the IEA.

Environmentalism inevitably takes a backseat to development in China and India, but even among many green advocates there, climate change is seen as a less pressing problem than air and water pollution. There is also a widespread feeling that the developed world, which grew rich while freely spewing carbon, should take most of the responsibility for climate change. "Our issue is that, first and foremost, the U.S. needs to reduce its emissions," says Sunita Narain, director of the Center for Science and Environment in New Delhi. "It is unacceptable and immoral that the U.S. doesn't take the lead on climate change." The Bush Administration, in turn, has rejected Kyoto partly because developing countries were exempt from emissions cuts.

The standoff between the U.S. and the Asian giants has stymied international climate-change efforts for years, but that is beginning to change—and some of the push is coming from Beijing. For most of the recent Montreal climate conference, the U.S. resisted any serious discussion of what should be done after Kyoto expires. But several major developing countries, including China as a quiet but present force, supported further talks and helped break down U.S. opposition. "At the moment, China seems more interested in engaging on this issue internationally than the U.S. does," says Elliot Diringer, director of international strategies for the Pew Center on Global Climate Change.

That's because China and India increasingly see climate-change policy as a way to address some of their immediate problems—such as energy shortages and local environmental ills—while getting the international community to help foot the bill. Thanks to poorly run plants and antiquated power grids, China and India are extremely energy inefficient. China uses three times as much energy as the U.S. to produce $1 of economic output. But that means there is a lot of room for improvement, and saving energy by cutting waste is less expensive than building new coal plants. It also reduces dependence on foreign energy and comes carbon and pollutant free. "Efficiency really is the sweet spot," says Dan Dudek, a chief economist at Environmental Defense. Beijing agrees: the government aims to reduce energy intensity—the amount of energy used relative to the size of the economy—20% by 2010.

Making ambitious pledges is easy—that is what five-year plans are for—but finding the will and the funds to make them stick is trickier. One source of funding is the Clean Development Mechanism, a part of the Kyoto Protocol that allows developed countries to sponsor greenhouse-cutting projects in developing countries in exchange for carbon credits that can be used for meeting emissions targets. Those projects don't require any technological breakthroughs. A 2003 study by the consulting firm CRA International found that if China and India invested fully in technology already in use in the U.S., the total carbon savings by 2012 would be comparable to what could be achieved if every country under the Kyoto Protocol actually met its targets.

But that window of opportunity is closing rapidly. Every step forward that these countries take today (such as China's move to make its auto-emission regulations stricter than the U.S.'s) risks being swamped by growth tomorrow (for example, China could have 140 million cars on the road by 2020). What China and India really need to ensure green development is what the world needs: a broadly accepted post-Kyoto pact that is strict enough to make it economically worthwhile to eliminate carbon emissions. Though actual cuts are off the table for now, Beijing and New Delhi seem willing to discuss softer targets, such as lowering carbon intensity. But they feel that Washington must take the lead. "It is possible for these countries to achieve the growth they deserve without wrecking the climate," says Diringer. "They just can't do it on their own. It has to go through the U.S."

Maybe we can begin by living a bit more like the average Chinese or Indian—before they start living like us. ***—With reporting by Susan Jakes and Jodi Xu/Beijing***

India's greenhouse-gas emissions could rise 70% by 2025 ● The increase in China's emissions from 2000 to 2030 will nearly equal the increase from the entire industrialized world ● China's total electricity demand will rise an estimated 2,600 gigawatts by 2050, which is the equivalent of adding four 300-megawatt power plants every week for the next 45 years ● India's energy consumption rose 208% from 1980 to 2001, even faster than China's, and nearly half the population still lacks regular access to electricity